Experimental details of transverse diffusivity studies

*Paul Scott, Eleni Toumpanaki** and *Janet M. Lees*

Dr. P. Scott

Cambridge Design Partnership, Church Road, Toft, Cambridge, CB23 2RF, UK.
Email: Paul.Scott@cambridge-design.com

Dr. E. Toumpanaki
University of Bristol, Department of Civil Engineering, University Walk, Bristol, BS8 1TR, UK.
Email: eleni.toumpanaki@bristol.ac.uk

Prof. J.M. Lees
University of Cambridge, Department of Engineering, Civil Engineering Building, JJ Thomson Ave 7a, Cambridge, CB3 0FA, UK
Email: jmL2@eng.cam.ac.uk

Table S1. Experimental details of transverse diffusivity studies.

Author	V_f	De (mm^2/s)	t (mm)	D_{22}/D_e	Temp. (°C)	RH (%)	Saturation level	Diff. Model
Bohlmann & Derby (a) (1977) [37]	0.630	[c)]8.00×10^{-7}	0.72	0.180	24	100	No *	Fickian
	0.630	[c)]9.20×10^{-5}	0.65	0.211	60	100	No *	Fickian
	0.630	[c)]7.60×10^{-5}	0.68	0.240	82	100	No *	Fickian
	0.630	No data	0.67	0.176	60	50	No *	Fickian
Bohlmann & Derby (b) (1977) [37]	0.700	No data	0.63	0.009	60	100	No *	Fickian
Kondo & Taki (a) (1982) [32]	0.600	7.01×10^{-7}	1	0.445	75	40	–	Fickian
	0.600	7.86×10^{-7}	1	0.397	75	65	–	Fickian
	0.600	8.88×10^{-7}	1	0.464	75	90	–	Fickian
Kondo & Taki (b) (1982) [32]	0.560	1.23×10^{-7}	1	0.315	30	65	–	Fickian
	0.560	1.29×10^{-7}	1	0.360	30	90	–	Fickian
	0.560	1.50×10^{-6}	1	0.294	75	40	–	Fickian
	0.560	1.63×10^{-6}	1	0.387	75	65	–	Fickian
	0.560	1.58×10^{-6}	1	0.342	75	90	–	Fickian
	0.600	7.65×10^{-8}	–	0.139	23	100	–	Fickian

DeIasi &	0.600	3.10×10^{-7}	–	0.258	49	100	–	Fickian
Whiteside [39]	0.600	1.61×10^{-6}	–	0.190	82	100	–	Fickian
Bond [10]	0.610	7.42×10^{-7}	0.5, 1	0.359	50	23	Yes	[d)]Relax
	0.610	6.66×10^{-7}	0.5 ,1	0.360	50	50	Yes	[d)]Relax
	0.610	5.16×10^{-7}	0.5, 1	0.549	50	75	Yes	[d)]Relax
	0.610	5.31×10^{-7}	0.5, 1	0.565	50	96	Yes	[d)]Relax
	0.610	1.51×10^{-6}	0.5, 1	0.361	65	75	–	[d)]Relax
	0.610	1.36×10^{-6}	0.5, 1	0.395	65	96	–	[d)]Relax
	0.610	2.45×10^{-6}	0.5, 1	0.412	85	43	No [b)]	[d)]Relax
	0.610	2.31×10^{-6}	0.5, 1	0.462	85	75	No [b)]	[d)]Relax
	0.610	1.94×10^{-6}	0.5, 1	0.479	85	94	No [b)]	[d)]Relax
Adams & Singh [22]	0.53	2.15×10^{-6}	2 , 1.2	0.540	100	100	No	Fickian
Hong et al. [39]	0.665	$6.26\text{x}10^{-7}$	1.4	0.038	23	DW		Relax
	0.665	$24.17\text{x}10^{-7}$	1.4	0.022	40			
	0.665	$61.14\text{x}10^{-7}$	1.4	0.025	60			
Wang et al. [24]	0.50	$8.69\text{x}10^{-6}$	2.0	0.067	60	DW	Yes	Fickian
	0.50	$8.69\text{x}10^{-6}$	2.0	0.163	60			
	0.50	$3.68\text{x}10^{-6}$	2.0	0.043	60			
	0.50	$3.68\text{x}10^{-6}$	2.0	0.102	60			
Arnold et al. [40]	0.58	$11.91\text{x}10^{-8}$	1,2,4	0.372	23	W	Yes	Fickian
	0.58	$31.2\text{x}10^{-8}$	1,2,4	0.401	40	W		
	0.58	$143.2\text{x}10^{-8}$	1,2,4	0.482	70	W		
	0.58	$155.5\text{x}10^{-8}$	1,2,4	0.418	70	85		
	0.58	$175.5\text{x}10^{-8}$	1,2,4	0.361	70	60		
	0.58	$11.91\text{x}10^{-8}$	1,2,4	0.144	23	W		
	0.58	$31.2\text{x}10^{-8}$	1,2,4	0.124	40	W		
	0.58	$143.2\text{x}10^{-8}$	1,2,4	0.151	70	W		
	0.58	$155.5\text{x}10^{-8}$	1,2,4	0.135	70	85		
	0.58	$175.5\text{x}10^{-8}$	1,2,4	0.110	70	60		
Shen & Springer [9]	0.680	[1]8.00×10^{-4}	1.27	0.068	121	100	No [a)]	Fickian
	0.680	[1]5.00×10^{-5}	1.27	0.072	93	–	No [a)]	Fickian
	0.680	[1]8.50×10^{-5}	1.27	0.078	71	–	No [a)]	Fickian
	0.680	[1]2.00×10^{-6}	1.27	0.070	49	–	No [a)]	Fickian
	0.680	[1]7.50×10^{-6}	1.27	0.064	27	–	No [a)]	Fickian

[a)] Understanding based on sample presented from the dataset
[b)] Though saturation is not observed, it is estimated through use of regression analysis
– No data, W=Water and DW=Distilled water
[c)]obtained from figure so there may be a loss of accuracy [d)]Fickian parameters also calculated